Asanté RJ21B Module Installation Guide

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This equipment generates, uses and can radiate radio frequency energy. If this equipment is not insulated properly in strict accordance with the instructions in this manual, then it may cause interference in this electronic environment. This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against radio frequency interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case, the user at his own risk and expense will be required to correct the interference in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference, in which case, the user at his own risk and expense will be required to correct the interference.

Asanté Warranty

Asanté Technologies, Inc. warrants that the Asanté NetStacker RJ21B Module will be free from defects in title, materials and manufacturing workmanship for a period of one (1) year from the date of purchase. If the NetStacker RJ21B Module is found to be defective, then, as your sole remedy and as the manufacturer's only obligation, Asanté Technologies, Inc. will repair or replace the product (see "Asking for Assistance" for information on how to contact us). This warranty is exclusive and is limited to the Asanté NetStacker RJ21B Module.

This warranty shall not apply to an Asanté NetStacker RJ21B Module that has been subjected to abuse, misuse, abnormal electrical or environmental conditions, or any condition other than what can be considered normal use.

Δ Note: The warranty card must be filed with Asanté Technologies, Inc. within 30 days after date of purchase.

Asanté Warranty Disclaimer

Asanté Technologies, Inc. makes no other warranties, express, implied or otherwise, regarding the Asanté NetStacker RJ21B Module, and specifically disclaims any warranty for merchantability or fitness for a particular purpose.

The exclusion of implied warranties is not permitted in some States and the exclusions specified herein may not apply to you. This warranty provides you with specific legal rights. There may be other rights that you have which vary from State to State.

Preface

- **About this Manual on page xii**
- **What Typographic Changes and Symbols Mean on page xiii**

ASANTÉ

About this Manual

This Installation Guide for the RJ21B Module is part of a set of four installation guides which you will use when you install the NetStacker Hub.

The three additional guides you will find useful when installing the hub are

- NetStacker Hub Installation Guide
- Asanté RJ45B Module Installation Guide
- Asanté NetStacker NMM Lite Installation Guide

The NMM Lite daughter board is designed specifically for the NetStacker Hub.

Related Documentation

You can install other Asanté modules in the NetStacker Hub.

For information about these products, refer to the appropriate installation guide.

What Typographic Changes and Symbols Mean

Sometimes it is necessary to give a special meaning or significance to the information in the manual. We do this by displaying a different typeface and often by presenting the text in a different format. Here are examples of the special typefaces and formats used in this manual. We suggest that you become familiar with them here before going on to the rest of the manual.

This kind of bolded text is used when special emphasis is necessary.

When certain information is noteworthy or unusual, it is set off in a special format:

Δ Note: This information is noteworthy or unusual.

When information is **especially** important, it is set off with this format:

▲ **Important:** This information is very important.

The following table describes the type changes and symbols used in this guide.

Typeface or Symbol	Meaning	Example
AaBbCc123	The names of commands, parameters, and directories; on-screen computer output	Use *dir* to list all parameters.
AaBbCc123	What you type, contrasted with on-screen computer output	*Login:* **su** *PassWord:*
AaBbCc123	Command-line placeholder: replace with a real name or value	To set baud rate, type: *set baudrate=38400*
[AaBbCc123]	Commands in brackets denote a key to press	*Login*: **su** [Return]

Procedures and Instructions

Many times, the manual provides specific instructions about how to perform a task or configure an application. Where you must perform certain steps in a certain order, the manual provides a formal procedure.

All procedures in the manual are made to look different from the regular text to make them easily recognizable and simple to follow.

---

1 Read this first step in this procedure. Be sure to follow all following steps as well.

If any step in the procedure requires an explanation, the information will follow the instruction, as shown here.

2 Now read this step in the procedure.

3 And finally, read this step in the procedure.

4 The last step in any procedure has a line drawn underneath it, showing the end of the procedure.

This way, you will always know where a procedure starts and stops.

Asanté RJ21B Module Installation Guide

- Introducing the RJ21B Module on page 2
- Installing the RJ21B Module on page 3
- The Front Panel on page 7
- The Back Panel on page 8
- Technical Specifications on page 12

ASANTÉ

Introducing the RJ21B Module

The Asanté RJ21B Module is a 24-port, double-height repeater that plugs into the Asanté NetStacker chassis or the AsantéHub 2072 chassis. It is specially designed to accommodate the Asanté NetStacker NMM Lite daughter board which provides the intelligence for the hub. (The RJ21 Module does not accommodate a daughter board.)

Thus, one NetStacker Hub, with an RJ21B board and a mounted NMM Lite daughter board, provides network management capability in addition to 24-node connectivity. A stack of three NetStacker hubs requires one NMM Lite daughter board for network management capability.

This module has its own built-in retiming unit which enables it to continue functioning when another module malfunctions in the NetStacker stack or the AsantéHub 2072.

RJ45B Module Features

The RJ21B Module has the following features:

- ❏ Two RJ21 connectors (50-pin Telco)
- ❏ Two AUI connectors; one is recessed to accommodate an Asanté Mini MAU for Thin, Twisted-Pair or Fiber connectivity
- ❏ Hot-swap capability
- ❏ Link/Receive LEDs that display port statistics for each port
- ❏ Full compliance with IEEE 802.3 Ethernet specifications for 10BaseT

Figure 1 below shows an RJ21B Module installed in a NetStacker Chassis, with an Asanté Mini MAU for 10Base2 (Thin) connected to the recessed AUI connector.

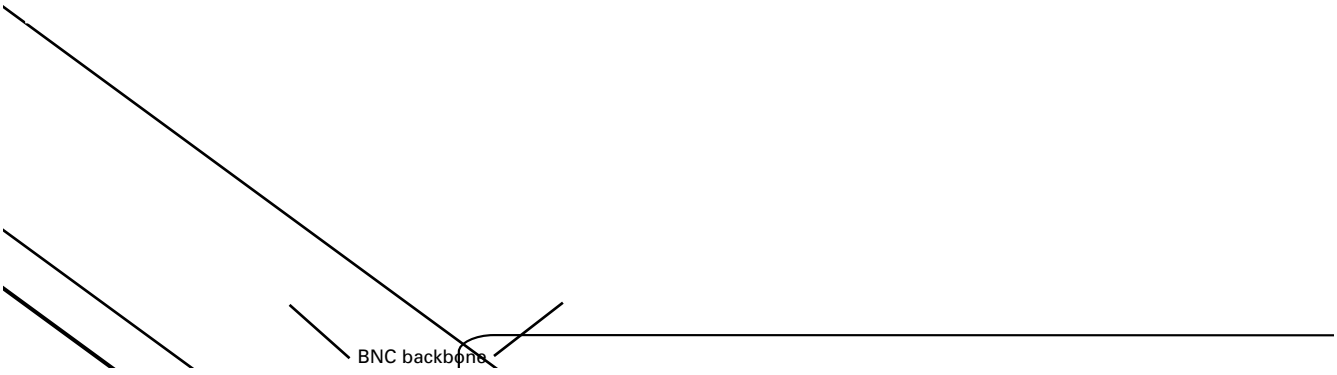


Figure 1 The Asanté RJ21B Module

You manage the RJ2B Module from a network management station using AsantéView Lite In-Band and/or Out-of-Band (or AsantéView). All 24 ports on the RJ21B Module are on Segment 1 and cannot be switched to Segment 2. For segment switching capability in a NetStacker stack, use the full-size AH2072 NMM.

Installing the RJ21B Module

To install the RJ21B Module, you will perform the following operations.

- ❏ Ground yourself
- ❏ Check the package contents
- ❏ Install the module and check the LEDs
- ❏ Connect the module to other devices

Instructions for installing a recessed Asanté Mini MAU are included on page 4.

If you are using an NMM Lite daughter board, you must install the daughter board before you install the RJ21B module in the NetStacker chassis. Refer to the NMM Lite Installation Guide for instructions.

Grounding Yourself

Before you unpack or handle the module, you must discharge static electricity from your body or clothes by attaching the provided grounding strap to your wrist and then touching the mount rack or a piece of metal. Make sure the chassis is already grounded.

Checking Package Contents

The Asanté RJ21B package contains the following items:

- ❏ Asanté RJ21B Module in antistatic packaging
- ❏ Installation guide (this manual)
- ❏ Warranty card

Required Tool

We recommend you use a #1 slot screwdriver to tighten the module to the chassis. You can also hand-tighten the module.

Connecting a Recessed Mini MAU

If you plan to use an Asanté recessed Mini MAU, you need to connect it to the recessed AUI connector before you install the module.

To install a recessed Asanté Mini MAU:

1. Unscrew the two ejector screws on each side of the module's front panel and pull out the module approximately four to five inches from the chassis. See Figure 2.

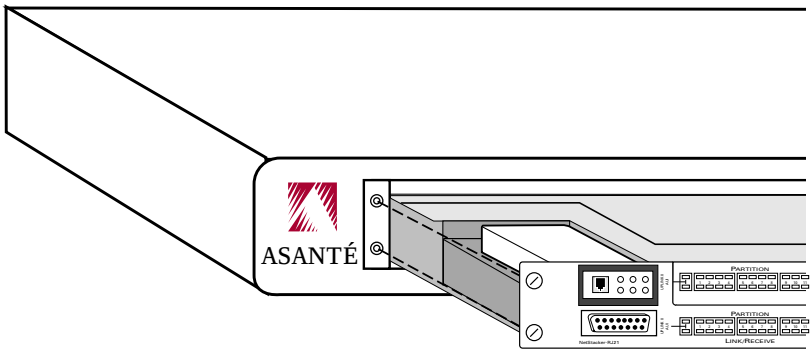


Figure 2 The Mini MAU filler plate in the RJ21B Module

2. Remove the Mini MAU's filler plate.

3. Insert the Mini MAU by guiding it into the recessed slot until it is securely fastened to its connector.

4. Reinsert the module into the chassis.

Installing the NMM Lite on the RJ21B Module

If you plan to mount an NMM Lite daughter board on the RJ21B mother board, you must do this before you install the RJ21B board.

For instructions on how to install the NMM Lite daughter board, on the RJ21B mother board, refer to the NMM Lite Installation Guide.

Figure 3 shows an NMM Lite daughter board installed on an RJ21B mother board.

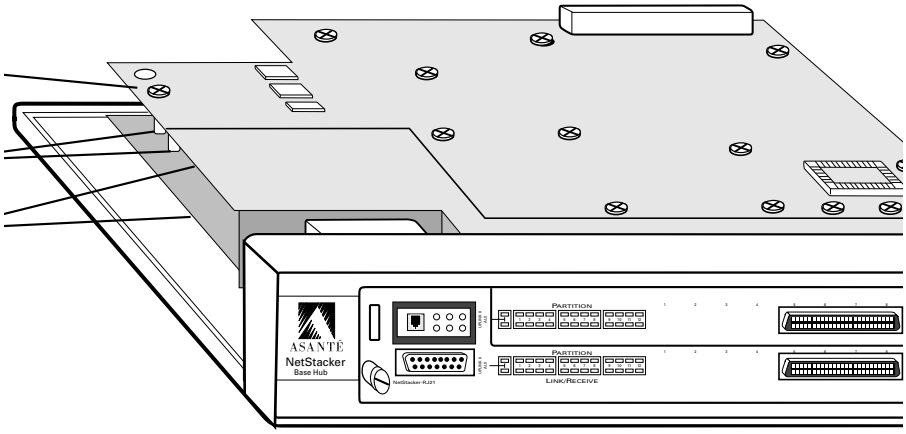


Figure 3 NMM Lite daughter board installed on RJ45 mother board

Installing the RJ21B Module

The NetStacker or AsantéHub 2072 chassis should be installed before you can install the RJ21B Module.

To install the RJ21B Module:

1 Remove the module from its antistatic packing, taking care to observe proper antistatic procedures.

Δ Note: Handle the module only by its edges. Do not touch the chips or connectors.

2 Align the module to the edges of the card guides on the slots in the chassis. Gently slide the module in until you can begin tightening the screws. See Figure 4.

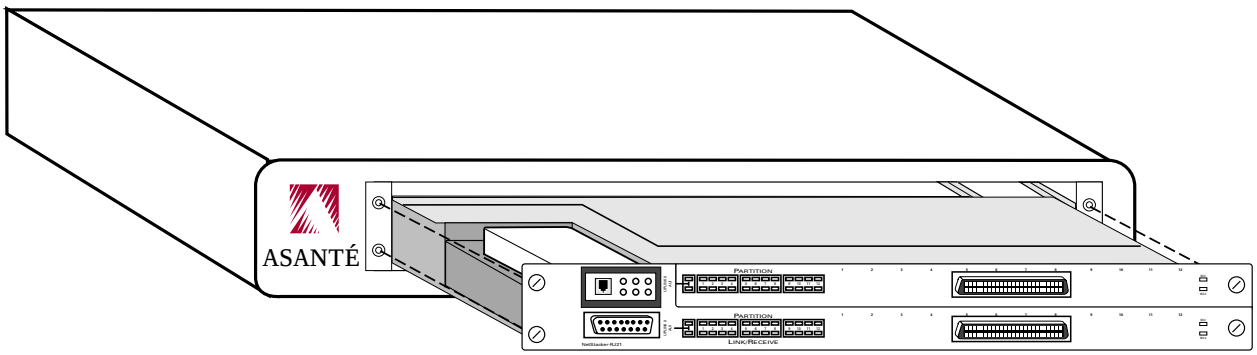


Figure 4 Installing the RJ21B Module

3 Tighten the module to the chassis by hand or use a #1 slot screwdriver, fastening the screws in unison and using the same amount of force to attach the module evenly to the chassis.

4 Turn on the power on the hub.

The SEG1 LED lights indicating the module is properly connected to network Segment 1.

5 When you connect a node to the hub using UTP cable, the Link/Receive LED on the used port turns green, indicating a link is established between the node and the hub.

The Front Panel

The RJ21B Module front panel displays the following connectors and LEDs:

- ❏ Two AUI connectors
- ❏ Two RJ21 connectors (50-pin Telco)
- ❏ AUI Uplink LEDs
- ❏ 24 Partition LEDs
- ❏ 24 Link/Receive LEDs
- ❏ Segment LEDs (1 and 2)

Figure 5 shows the RJ21B Module front panel. A recessed Mini MAU for 10BaseT is connected to the recessed AUI connector.

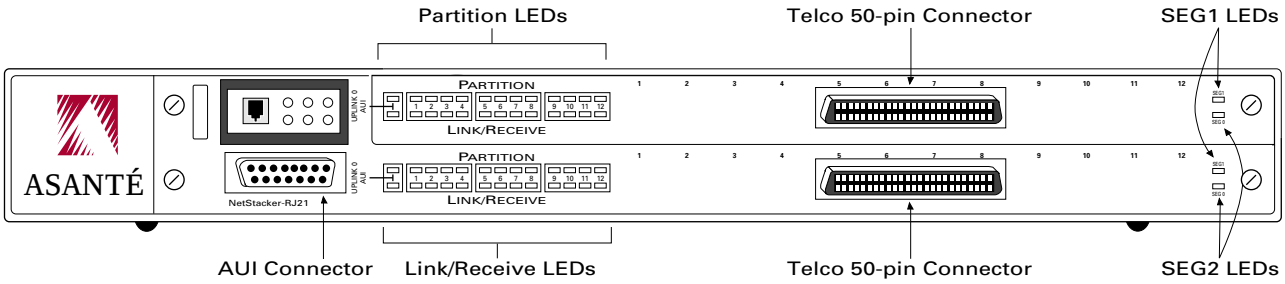


Figure 5 RJ21B Module front panel

Table 1 identifies the RJ21B Module connectors and LEDs and their respective functions.

Table 1 RJ21B Module Connector and LED Functions

Name	Function
AUI Connector Recessed slot	Serves as uplink port to network backbone. Functions as compartment for housing recessed Mini MAU.
RJ21 Connector	50-pin Telco connector typically used to connect punchdown block to hub.
AUI Uplink LED	If active MAU is attached, this LED remains lit, indicating link exists and is enabled
Partition LEDs	24 LEDs, indicating partitioning ports on module.
Link/Receive LEDs	24 LEDs, when lit, indicate link connection; when blinking, indicate packets received on port.
Segment 1 LED Segment 2 LED	With NMM Lite daughter board mounted, Segment 1 LED is lit; with AH2072 NMM, either Segment 1 or Segment 2 LED is lit identifying segment to which module is connected. Neither segment LED is lit if module is not connected to segment. Note, even when module is not connected to segment, repeater still functions.

Interpreting the LEDs

The RJ21B Module front panel LEDs fall into four categories:

- ❏ AUI port link and partition
- ❏ Port-by-port partition LEDs
- ❏ Port-by-port link/receive LEDs
- ❏ Segment configuration LEDs

Table 2 describes the RJ21B Module LEDs.

Table 2 RJ21B Module LEDs

LED	Color/State	Meaning
AUI Uplink PARTITION LED	Amber On, Blinking	Hub has auto-partitioned uplink; high collision rate possible.
	Amber On, Steady	Operator has manually partitioned uplink or trap has been sent.
	Off	Uplink not partitioned.
AUI Uplink LINK LED	Green On, Blinking	Blinking LED indicates hub is receiving traffic over uplink. Faster rate of blinking indicates greater traffic.
	Green On, Steady	No traffic over uplink, or link integrity is disabled.
PARTITION 24 LEDs	Amber On, Blinking	Autopartitioning.
	Amber On, Steady	Slot has been manually partitioned by administrator or trap.
	Off	Normal port operation.
LINK/ RECEIVE 24 LEDs	Green On, Blinking	Blinking LED indicates hub is receiving traffic over port.
	Green On, Steady	Link present or link integrity test disabled.
	Off	Link not present. Port status unavailable if link integrity test disabled.
SEG1 and SEG2 2 LEDs	Green On, Steady	With an NMM Lite, SEG1 is lit; with an AH2072 NMM SEG1 or SEG2 is lit.
	Off	Board not seated properly or both LEDs intentionally set off by operator. Though module may not be connected to network segment, it still functions as repeater.

The Back Panel

If you have installed a Network Management Module Lite (NMM Lite) daughter board on the RJ21B mother board, the NMM Lite back panel appears. For more information about the back panel, refer to the Asanté NetStacker NMM Lite Installation Guide.

Connecting Other Devices

The RJ21B Module provides two types of connectors for connecting devices:

- ❏ AUI connectors for connecting to the backbone and to other hubs. One of the connectors accommodates a recessed Mini MAU.
- ❏ An RJ21 connector for connecting to the punch-down block and network devices

Connecting to the Backbone Using the AUI Connector

You have two AUI connectors on the front panel—a recessed and a non-recessed connector. The recessed AUI connector is designed to accommodate an Asanté Mini MAU.

To connect the hub to the backbone, use one of the AUI ports. Use a MAU if your backbone is Thin, Fiber, or Twisted-Pair.

- Δ Note: Make sure SQE (Signal Quality Error) is disabled on the MAU when it is attached to the AUI connector.

In Figure 6 the hub is connected to a Thin Ethernet backbone using an Asanté 10Base5 Mini MAU in the recessed AUI connector.

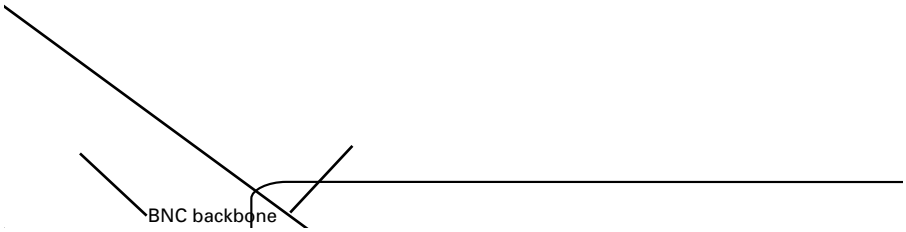


Figure 6 Using the AUI port to connect to the backbone

Interconnecting Hubs Using the AUI Port

You can interconnect hubs using the AUI Uplink port located on the module's front panel. Use the appropriate MAU for your backbone.

- Asanté provides an RJ45B, BNC, and 10BaseF Mini MAU to accommodate your backbone cabling scheme.

To interconnect hubs using the AUI Uplink port

1. Attach the appropriate MAU (if you are not using thick Ethernet) to the AUI port on of the first hub.
2. Attach the Ethernet cable.
3. Attach a MAU to the AUI port on the second hub.

   Figure 7 shows a NetStacker Hub with an RJ21B Module connected to an AsantéHub 2072 with an RJ45 Module in the second hub. Each hub uses a recessed Asanté BNC Mini MAU to connect to the BNC backbone.

   - Note: Make sure the MAU SQE (Signal Quality Error) is disabled when the MAU is attached to the AUI port.

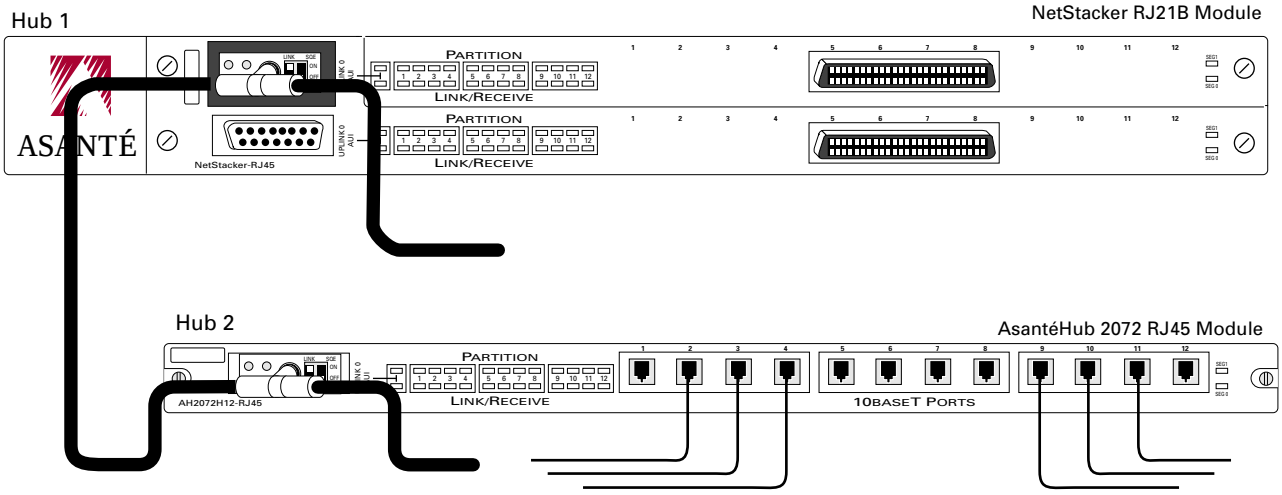
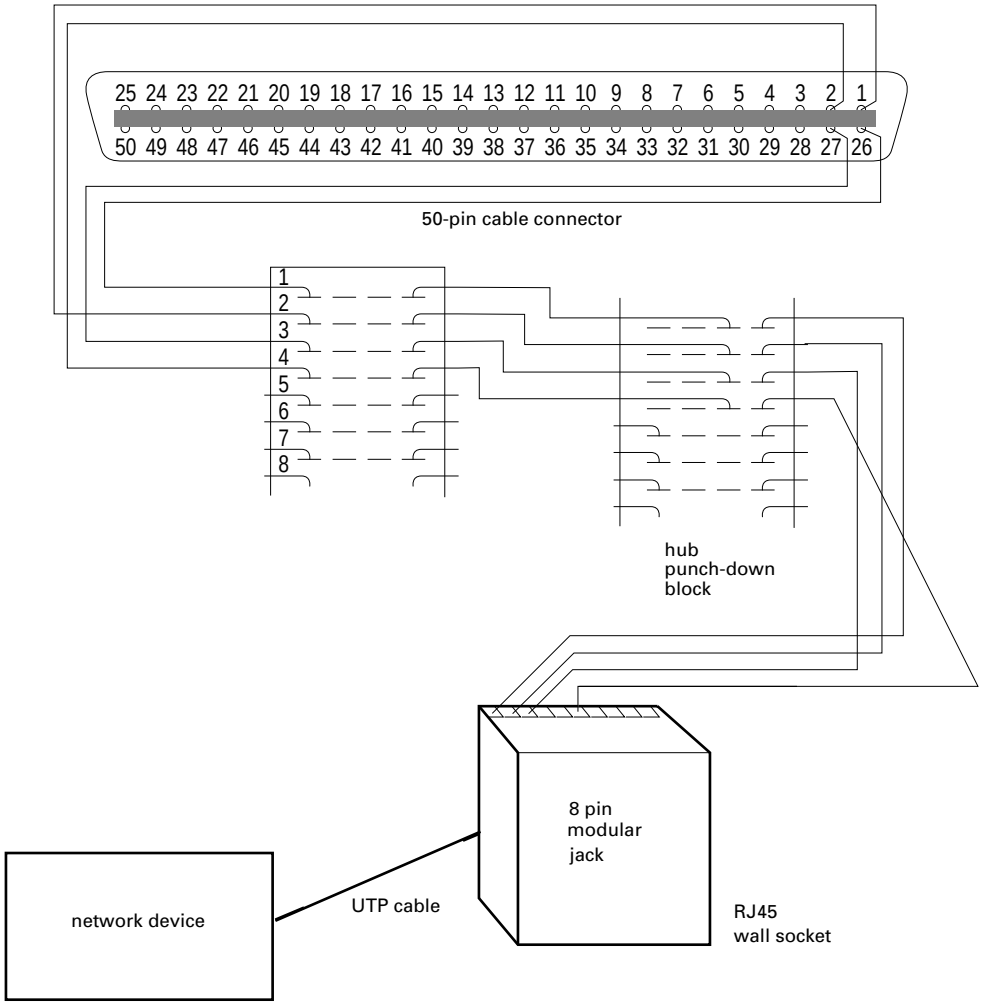


Figure 7 Using the AUI port to interconnect hubs

Wiring the RJ21 Connector to a Punchdown Block

The RJ21 connector (50-pin Telco) is typically used to provide a connection between the NetStacker Hub and the punchdown block, which is located usually in a wiring closet.The next connection is from the punchdown block to a modular jack and then from the jack to a network device such as a PC, Mac, printer, or modem.Figure 8 shows an example of a wiring scheme for one port in this configuration.

Note that the connection begins at the 50-pin Telco connector and fans out to the punchdown block to an RJ45 connector. From the RJ45 connector, you have the option of connecting to a network device such as a management station or a workstation.



Single device link—Amphenol connector to 8-pin modular jacack

Technical Specifications

This section provides:

- ❏ RJ21B Module Technical Specifications
- ❏ Pin-Outs and Cable Specifications
- ❏ Pin-Outs and Cable Specifications
- ❏ Pin-Outs and Cable Specifications
- ❏ Cable Limitation Specifications

RJ21B Module Technical Specifications

The technical specifications for the RJ21B Module are as follows:

Standards Supported

IEEE 802.3 Ethernet specifications for 10-BaseT (UTP) media

Data Rate

10 Mbps

Maximum Cable Distances

10BaseT (UTP) -- 100m (328 ft.)

Safety

Designed in accordance with UL, CSA, TUV/IEC requirements

Physical Dimensions

17" x 1.8" x 12"

Weight

Approximately 4lbs.

Environmental

Operating Temperature: 0° to 40° C ambient
Operating Humidity: 5 to 85% noncondensing
Operating Altitude: 10,000 ft. (3,048m) maximum
Storage Temperature: -30° to 80° C
Storage Humidity: 5 to 90% noncondensing
Storage Altitude: 25,000 ft. (7,620m) maximum

Pin-Outs and Cable Specifications

This section defines the pin-out assignments and cable specifications for the following:

- RJ45 to RJ21 pin-outs
- RJ45 modular jack to wall jack pin-outs
- RJ45 to RJ45 crossover cables
- AUI DB-15 pin-outs

RJ45 to RJ21 Pin-Outs

The Amphenol modular 50-pin connector establishes connections to the 8-pin modular jack through the network (hub) and distribution (house) punchdown blocks. See Figure 8 and Figure 9. Wire jacket colors may vary.

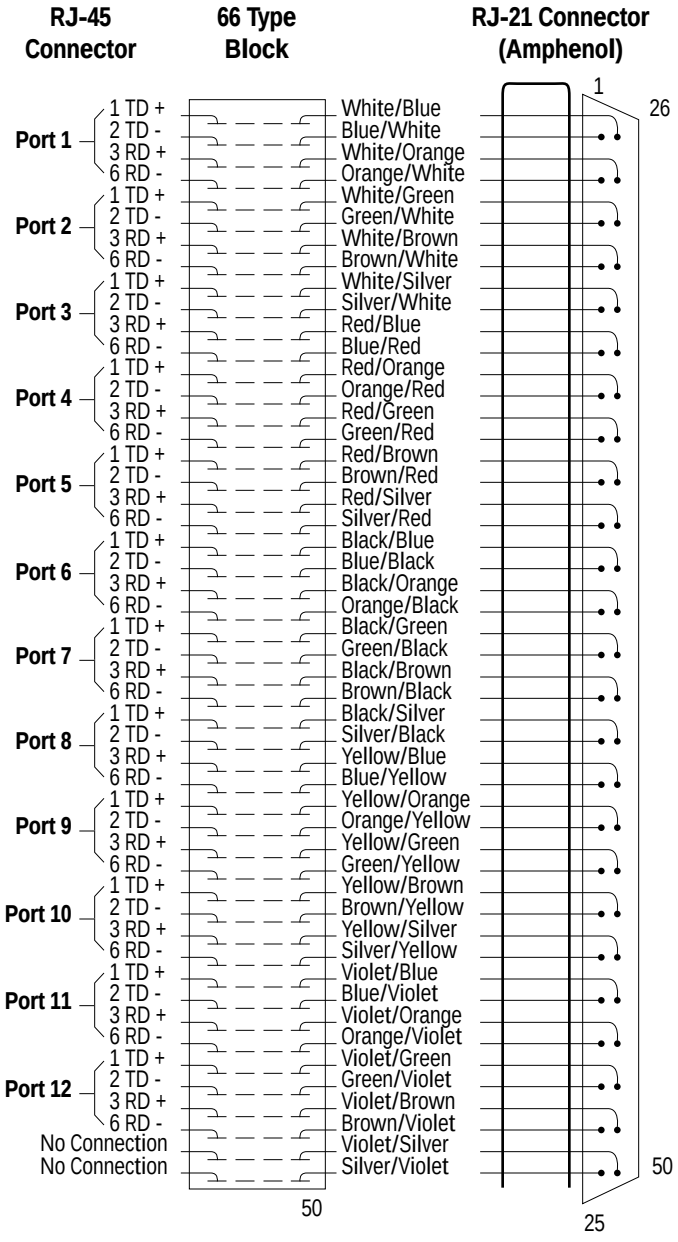


Figure 8 RJ45to RJ21 pin-outs

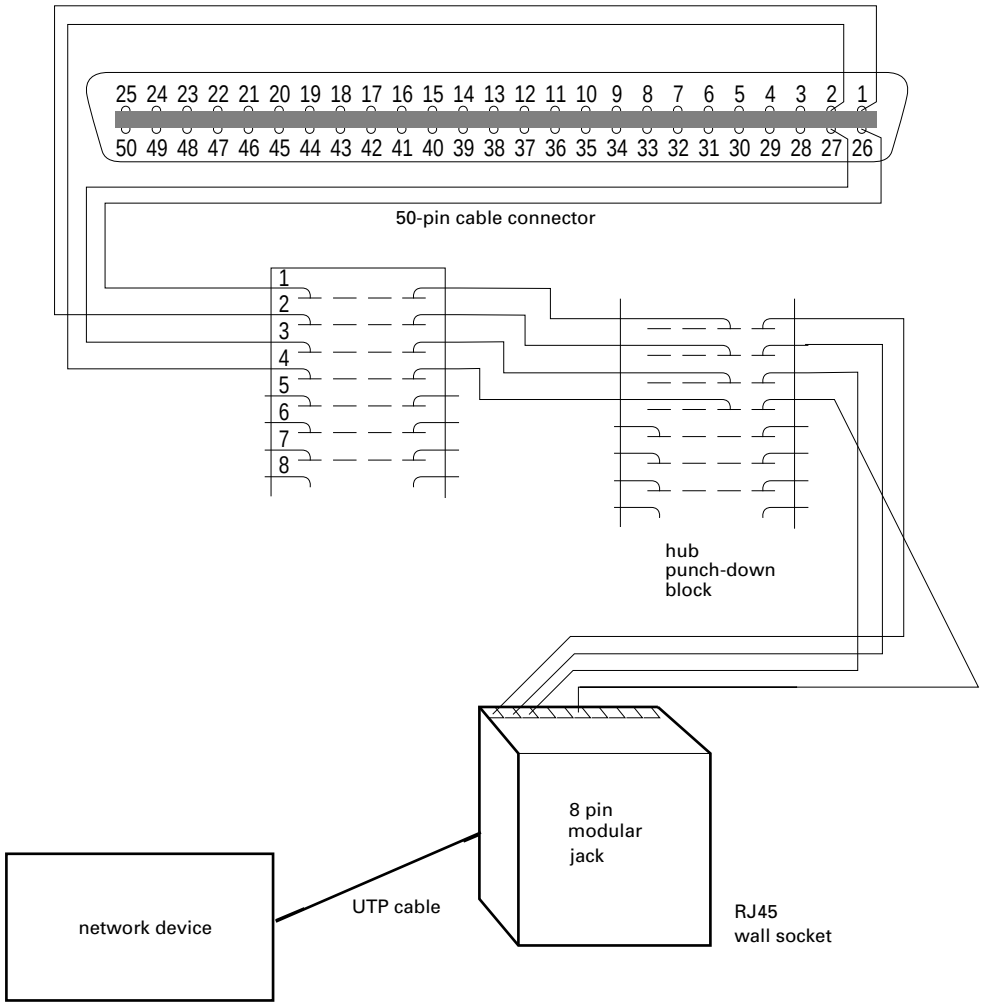


Figure 9 Single device link—Amphenol connector to 8-pin modular jack

AUI (DB-15) Pin-Outs

Table 3 lists the AUI connector's pin, circuit, and signal names.

Table 3 AUI Connector Pin, Circuit, and Signal Names

Pin	Circuit	Signal Name
03	DO+	Data Out positive
10	DO-	Data Out negative
11	DO S	Data Out circuit Shield
05	DI+	Data In circuit positive
12	DI-	Data In circuit negative
04	DI S	Data In circuit Shield
07	CO+	Control Out positive (optional)
15	CO-	Control Out negative (optional)
08	CO S	Control Out Shield (optional)
02	CI+	Control In positive
09	CI-	Control In negative
01	CI S	Control In Shield
06	VC	Voltage Common
13	VP	Voltage Plus
14	VS	Voltage Shield
Shell	PG	Protective Ground

Cable Limitation Specifications

Table 4 lists the IEEE standards for determining how networks should be configured when using coaxial cable connections.

Table 4 IEEE Standards for Coaxial Cable Connections

	10Base5 Ethernet (Thick)	**10Base2 Thin Coax (Standard)**	**10BaseT**
Data rate	10 Mbits	10 Mbits	10 Mbits
Cable length per trunk segment	500m	185m	100m
Nodes per trunk segment	100	30	1
Min. distance between nodes	2.5m	.5m	n/a
Max. number of trunk segments	5	3 (+ 2 repeater only)	n/a
Max. network trunk length	2500m	925m	n/a
Cable type	dbl. shield.4″ coax	sgl. shield.2″ coax	solid conductor
Transceiver type	external with drop cable	recessed or external	n/a
Connector	clamp-on	BNC	RJ-45

Δ Note: Extended length networks **cannot** contain any repeater-only segments.